

HARRIS B. STEWART, JR.:

Northern Herring Expedition 1951



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Oceanic and Atmospheric Research
Atlantic Oceanographic and Meteorological Laboratory
Miami, FL

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M. J. Bello and A. Y. Cantillo

(Editors)

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COVER PHOTO: M/V Horizon in Kodiak, AK (1951).

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TABLE OF CONTENTS

LIST OF PLATES.....	i
Abstract.....	1
Preface.....	1
Diary and transcription	5
Acknowledgments	5
References.....	6
H. B. Stewart M/V Horizon Record.....	7
Photographic Section	27
Data Section	51
Miscellaneous Documents	55

LIST OF PLATES

1. Dredging in the Gulf of Alaska after surveying the Mendocino escarpment in 1951.2
2. Cross-section of the Stewart manganese nodule, a very large piece of white calcareous ooze, thickly coated with black ferromanganese oxides, cut into three sections to expose the interior.....3

Harris B. Stewart, Jr.: Northern Holiday Expedition 1951

M. J. Bello[◇] and A. Y. Cantillo[△]
(Editors)

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Abstract

Intensive exploration of the seas using modern technology began in the 1950s, when the US Navy funded research to increase knowledge about the oceans. Harris B. Stewart, who eventually became the first director of the NOAA Atlantic Oceanographic and Meteorological Laboratory in Miami, FL, joined the 1951 Northern Holiday Expedition of the Scripps Institution of Oceanography when he arrived at the Institute to attend graduate school. The main goal of the expedition was to survey unexplored sections of nautical charts and perform a complete survey of the Mid-Pacific Mountains. Dr. Stewart's papers were donated to NOAA by his family upon his passing in 2000 including the field diaries written during his career. The field diary written during the Northern Holiday Expedition contains descriptions of day-to-day ship activities including the retrieval of a 100-pound manganese nodule and the charting of the Scripps Seamount.

Preface

Intensive exploration of the seas using modern technology began in the 1950s, when the US Navy funded research to increase knowledge about the oceans (Shor, 1983). Institutions such as Scripps Institution of Oceanography, La Jolla, CA, were on the forefront of such work. During the summer of 1951, scientists from Scripps sailed to the Gulf of Alaska aboard the M/V Horizon on the Northern Holiday Expedition. The scientific leader of the Expedition, Warren S. Wooster, explained that: "A holiday is an old nautical term that designates a piece of work left unfinished." The main goal of the expedition was to survey unexplored sections of nautical charts and perform a complete survey of the Mid-Pacific Mountains. Harris B. Stewart, who eventually became the first director of the NOAA Atlantic Oceanographic and Meteorological Laboratory in Miami, FL, had just arrived in La Jolla to start graduate school at the end of June 1951. Wooster asked him to join the scientific party and Stewart did not hesitate.

One of the highlights of the Expedition was the retrieval of an extremely large manganese nodule weighing over 100 pounds. The nodule came to the surface wrapped in the hydrographic wire. Stewart noted in the scientific log:

[◇] NOAA/NMFS/Southeast Fisheries Science Center, 75 Virginia Beach Dr., Miami, FL.

[△] NOAA/NOS/National Centers for Coastal Ocean Science, 1305 East West Hwy., Silver Spring, MD.



Plate 1. Dredging in the Gulf of Alaska after surveying the Mendocino escarpment in 1951. Left Henry W. Menard, right Harris B. Stewart. [Courtesy of SIO Archives/UCSD. Glossy print, black and white, 8 x 10 in. caljsioa_mc1871190003_m.jpg. H. William Menard Papers, 1938 -1986. Scripps Institution of Oceanography Archives, La Jolla, CA.]

"Great manganese globules measuring as much as 5 inches in diameter were pyramided on the top of the specimen . . . We are restraining ourselves (with difficulty) from breaking off a chunk to see if it is MnO₂ all the way through. It looks as though it might be, but we will preserve it as it came up till older & wiser oceanographers have looked & marveled." (Log book of Northern Holiday Expedition, Geological Data Center, Scripps Institution of Oceanography) (Shor, 1983).

A detailed account by Stewart of the retrieval of the manganese nodule can be found in Kerr Kuhns and Shor (2003) and is reproduced here courtesy of SIO/UCSD. It is interesting to note the similarities of this account with that in the original field diary.

The Big Catch

For the first week after Kodiak, the expedition settled down into a routine of station observations, mid-water trawls, continuous measurements of the various parameters that were recorded in the lab, and an occasional dredge or sediment core. Routine, that is, until the night of 10- 11 September.

Somehow the bottle-cast stations for four straight nights had ended up on my watch with Al Smith, Jose [Barandiaran], and Charlie Denkle. That night the other three secured after the deep cast was in, and Bill Riedel came aft to help me take core No. 10. We put the big Phleger corer over in 2750 fm (16,500 feet or just over three miles) of water. The dial in the hydrographic winch reads in meters, so it would take about 5100 meters of wire to reach the bottom if the corer went straight down. That night, however, even with only a light wind, Horizon was apparently drifting fast, for we soon had a wire angle of forty-five degrees. The corer certainly was not going straight down, so it would take more wire to get it to the bottom. We felt we would know when it reached the seafloor, for there was a clever device called a ball-breaker on the cable just above the corer. When the corer enters the bottom, tension on the cable is relieved, and a heavy mass of lead with a sharp point slides down within the ball-breaker to puncture a glass sphere that implodes with a pop that we can hear on the hydrophone that dangles over the side and is connected to a loudspeaker on the after edge of the boat deck. We had the winch operator let out 100 m more, then 200, 300 until we had 6300 m of wire out, and the winch drum was down to the last layer of wire, but still no pop from the ball- breaker. So we had the winch start the long voyage home for the corer.

With about 5900 m still out, the winch ground to a groaning, complaining halt. I climbed up to the boat deck to talk with Don Derringer - now in full beard - who was running the winch. He increased the power, and the drum turned slowly. As the ship rolled to port, the winch stopped. On the starboard roll, there was enough release of tension so a few feet of wire could be recovered. At this slow pace, we figured it would take at least three hours to bring the corer back aboard.

Bill and I did a bit of dip-netting in the light from Mac's floodlight, but dawn was coming, and the squid and sauries were not interested in being caught. Derringer's watch was over, and George Fenton had assumed the winch seat. I was sitting on the hatch cover hypnotized by the regular groans of the winch with each roll and enjoying slightly libidinous thoughts when I was startled by a loud splash sound followed by a heavy dripping sound. I turned and there above where the wire left the water and even with the overside bucket and rising slowly toward the sheave was a great gleaming black mass. It was still dripping as it rose slowly upward. I knew that if it reached the sheave we would be in trouble, so I screamed at George to stop the winch. He did when the "thing" was only inches below the sheave. I jumped into the bucket. At first glance, I thought it was a large turtle. It was round and about the right size. But once in the bucket, I could see that it was an immense rock that somehow had become entangled among the many meters of 5/32nd-inch wire that must have lain on the seafloor. The winch had stopped, and it seemed strangely quiet without the straining whine that changed pitch with every roll. George shouted down, "What is it, Stew?" I was looking at it and still couldn't believe it. Three or four turns of wire in a perfect clove hitch had secured a large manganese concretion. I held my breath for fear it would come loose and drop back into the sea. Who would believe me if I said we had brought up a big rock in the hydrographic

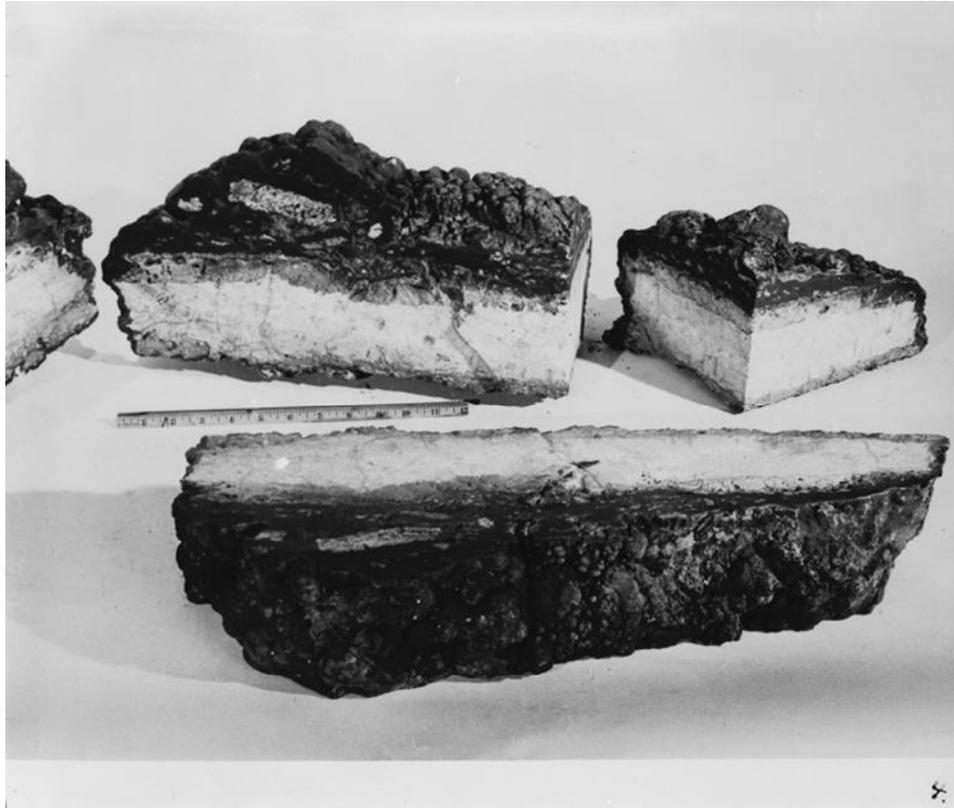


Plate 2. Cross-section of the Stewart manganese nodule, a very large piece of white calcareous ooze, thickly coated with black ferromanganese oxides, cut into three sections to expose the interior. The scale is in inches. Identification of this nodule as the one retrieved during the Northern Holiday Expedition has not been possible but it is probable. [Courtesy of SIO Archives/UCSD. Negative, black and white 4 x 5 in. caljsioa_mc18850029_m.jpg. H. William Menard Papers, 1938 -1986. Scripps Institution of Oceanography Archives, La Jolla, CA.]

wire, but it had dropped off and fallen back overboard? On the Mid-Pac Expedition [1950] scientists had been excited by fist-sized manganese nodules dredged from Sylvania, Hess and Johnson guyots, and here before me dangling on a wire no thicker than a lead pencil was a piece almost three feet across. I shouted for Bill Riedel and he came up into the bucket with me. We decided to have George lower it enough so it could rest on the rim of the bucket. He did, and as the ship rolled, I hung onto the rock as though my life depended on it. Had it gone back to the bottom, I think I still would have been hanging on when it landed.

Bob Haines brought out a wire come-along, hooked it to the wire and to the bucket rail so that it took up all the weight of the outboard part of the wire. George then reversed the winch, and Bill and I carefully - even lovingly - lowered the specimen onto the floor of the bucket and carefully unwrapped the wire that had held it so securely through its three-mile rise to the surface. We felt that without a doubt, it was the finest geological specimen ever recovered from the deep sea. We carried it into the lab, grinning like Cheshire cats. We knew we had a real trophy.

The Horizon nodule, as it is now known, weighed over 100 pounds. It was made up of a manganese oxide crust over a rock called phillipsite and topped with a pile of separate manganese nodules. It is a spectacular specimen and now resides in the museum of the Scripps Institution of Oceanography in La Jolla, California. Scripps Gets a Seamount

Another highlight of the Expedition was the survey of the Scripps Seamount, an 11,400-foot mountain, 18 miles across at the base, standing "in lonely grandeur on the sea floor" in the Gulf of Alaska. Its summit a mile below the surface. Stewart described the discovery of the Scripps Seamount in Kerr Kuhns and Shor (2003) reproduced here courtesy of SIO/UCSD.

In the Gulf of Alaska, Bill Menard and I surveyed ten seamounts, eight before our brief stopover in Kodiak and two more after we left. Three of the ten were new discoveries. These were surveyed in detail and their locations determined. Later, the results of these surveys and the supporting data were turned over to the US Coast and Geodetic Survey (USC&GS) so the seamounts could be shown on the nautical charts for which the USC&GS is responsible. The largest of these new discoveries was found some seven hundred miles northwest of Hawaii, and it was a big one. It was flat-topped and rose 11,400 feet above the seafloor to within 900 fm (5400 ft) of the surface. That's a mountain over two miles high that rose from a base only eighteen miles across. We thought this one was big enough to justify being named Scripps - a designation being saved for a really big one, and this was it! It is now listed in the Gazetteer of Undersea Features, names approved by the US Board on Geographic Names. It is listed as Scripps Guyot at 23° 50' N, 159° 23' E.

Diary and transcription

The Stewart family donated the papers of Dr. Stewart to NOAA's Atlantic Oceanographic and Meteorological Laboratory upon his passing on April 25, 2000. Among the Stewart material are 13 field diaries written over several decades, most during the time of great ocean exploration. The diaries will be transcribed and published as a series.

The Northern Holiday Expedition field diary is a bound notebook with a green cover, and measures 5 by 8 inches. Entries were made in ink and pencil, and include sketches of equipment and animals. Unnumbered sections of the diary contain black and white photographs, several of which are missing, and data. Loose material, including cruise instructions, newspaper clippings, notes, letters and a photograph, were found inside the diary.

The diary was transcribed by hand. Minor editorial changes were made as needed. Indecipherable entries are noted with "[xxx]". Editorial comments are noted in brackets and capital letters. Numbers outside the margin of the transcribed text are the page numbers of the original diary. The diary and ancillary material were scanned and the graphics files, in JPG format, are stored in the CD. In some computer systems, an active link to the appropriate graphic file is part of the page numbers found outside the margin of the transcription text.

Acknowledgments

The editors wish to thank H. M. Stanford, J. Gray and A. Lorenzo for their comments, and D. Day and the Regents of the University of California for their assistance. The transcription of the diary was funded through grant no. 02-432R from Environmental Services Data and Information Management (ESDIM), NOAA/NESDIS/GeoSpatial Data and Climate Services.

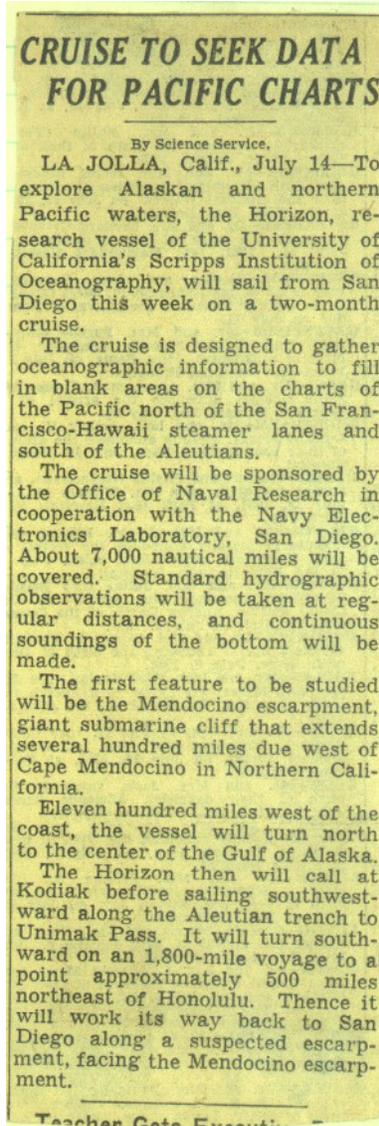
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H. B. Stewart
M/V Horizon
Record

0



Thursday - August 2 -

1

It is now Thursday Aug. 2nd, and we have been at sea since 4:30 Saturday afternoon July 28th. This is the first time that I have had simultaneously the time and inclination to start what I hope will be a pretty complete record of this cruise.

The first three days - through Monday night are - so far as I am concerned - better forgotten. It was moderately rough weather, and I was one sick cookie. The nights were spent in hellish wakefulness as I was rolled from one side of my dresser-drawer bunk to the other while my head and feet were ultimately raised and then dropped to be brought up with sickening suddenness. It is only during motion such as those of a ship or plane, sudden changes of direction, that one is made rather uncomfortably to realize that one's body is made of parts of varying rigidity. The bony parts would start back up as the fleshy parts were still on the way down. Lying on my back, I could feel my innards pressed against my spine, then they would rise as my body started down. It was all damned uncomfortable. Added to that was the noise of the engines - a noise I now am quite used to - and the noise of loose gear that was knocked against steel bulkheads with every roll.

2

To make my misery quite complete, I was thoroughly seasick. From Sunday morning till Tuesday noon I had but one small meal and one apple, all of which I saw a lot sooner than I had planned. There were others in the same boat - so to speak - and we now are all recovered and roll with the ship in the best nautical tradition.

6 Above the murk of misery that comprised those first days, quite a few interesting facts merit a brief note or two.

The ship is the motor vessel (M/V) Horizon, an ATA (Fleet Attack Tug) originally converted, as I understand it, for the Fish and Wildlife Service, but now owned and operated by the Scripps Institution of Oceanography and used solely for oceanographic research. She is 143 feet long, some 6 feet longer than the Littlehobo, and carries a crew of 19 in addition to the six of us in the Scientific Party:

3

Warren Wooster, Chemical Oceanographer

John Isaacs, Mid-H₂O Trawl -

H. Willard Menard, Submarine Geologist

Allen Smith, Oceanographer - Hydrographer

José Barandiaran, Peruvian Navy

John McFall, S.I.O. [SCRIPPS INSTITUTION OF OCEANOGRAPHY] Photographer

Charles Simmons, Asst. Technician

and H. B. [HARRIS STEWART] -

Jim Ean is our capt.

She is a good ship and pretty well rigged for this type of work, and the open mess (come in the whenever you are hungry) and general casual air are a most welcome contrast to the cold regulation-bound formality of the Mawry and battle ships. This is my first jaunt on a civilian ship, and if nothing else, the freedom from the ever-squawking p.a. systems of the navy with their "now hear this - - - " makes the comparison worthwhile. The crew aboard is a fine crew, mostly ex-navy chiefs and a smattering of youngsters from colleges in vacation.



4 But to start at the beginning: The ship pulled in at the Navy Electronics Laboratory Pier at Point Loma Friday noon - that would be the 27th - and I hopped aboard the finger lift and began to take the gear and had been collecting down to the ship. By 4:30 most of it was there and still had to be put aboard, but I quit for the day, as I still had all my own stuff to collect and had to move out of 924 So. Court. My suits are at Tom Parker's, Bill Riedel has my typewriter and books, Jean Pierson my laundry, and my trunk is in the back of XXX [NOT CLEAR]. Sat. A.M. I drove to San Diego to pick up some low canvas sneakers at a surplus store, and then picked up Bill Menard at his place in Pacific Beach. He left his car at Buff's place in Point Loma, and I drove him to the ship, locked and left Mohit in the parking place at N.E.L. and trust she is OK. The sea air will have raised havoc with her finish, but it will cost less to have the finish cleaned than to have rented a garage for two months, it's like renting your wife to someone. [SECTION CROSSED OUT]

I finished loading our gear, and we shoved off late Saturday afternoon. Had I realized that the good steak dinner in the mess that night was the last meal I would look at with comfort for three days, I would have enjoyed it even more.

5

At one point Sunday while I was bending wire at the vice back aft - wire for the dredge - and swallowing hard to keep from being sick again, I spotted a great cloud of spray that didn't at all look like the spin drift that was being blown from the white caps about us. Even as I watched, a long flat tentacle-like thing rose writhing some 15' above the surface of wave crests, it twisted and writhed and fell back into the water. I shoved it to the others, and as it happened the next time, I got a better look. About two feet broad, white on one side and black on the other with small bumps along the edge, it obviously was the 15-foot flipper of some much larger animal. The cloud of spray that I had seen that the other hadn't made me say whale, while the others were still in the octopus - turtle stage of deduction. A glance at the books kept aft showed that the hump-backed whale reaches 50' in length and has flippers just like this one that are 1/3 as long as it's body. I was set up as

on expert right off. We came about and spotted him still cavorting or "lob tailing" as they call it - as a matter of fact we had to go full right rudder to keep from hitting him - a collision that could have done us a good deal of damage. As we neared him, now lying flush with the surface, we could see his skinny back between successive waves, he must have realized that we were a scientific ship and "blew off" just as we changed course to avoid collision and sounded. We rushed to the side as he went beneath us, but couldn't see him again. Striped dolphins with a wartime camouflage-like pattern were with us most of Sunday as we paralleled the coast. Sleek gray and white devils that swam and dove over the crests in nice *en echelon* formations. When one of the crew brought back a flying fish that had been washed aboard, I felt indeed like Kon Tiki. Too, our working area aft was awash all Sunday and Monday with green water coming over the gunnels but I am glad we have engines and not merely the sail and bolsa that somehow carried that crew across to Polynesia.

[11](#)

Monday afternoon we stopped very briefly at Frisco. The bridge was in fog as it had been when last I passed under it on my way back from overseas in Feb. of '46.

We stopped to get John Issacs and some leads for the deep cast and I just had time to bob up and get a book for Clare. I had felt badly about not having done any more for her birthday than a telegram. The book on Calif. is not much of a present, but I just didn't know what to send her. We left S. F. late that afternoon, and as soon as the horns of the piers for the Golden Gate bridge were out of earshot, we were at last on our way.

[9](#)
[12](#)

There is a darned interesting hole at the entrance to S. F. harbor where it is narrowest. It is like others in similar areas where tides from a large area enter and leave on a constricted channel. There are several between the islands of Japan and a good one at Gibraltar. We got a good trace on the fathogram both in and out.

Since then we have been settling down into the routine of shipboard life and the busy business of oceanographic work.

It has been almost constantly rough, though today was most pleasant though still pitchy and rolley. It was as though the sea knew that we were here to wrest her secrets from her and had decided that no man would get her secrets without living intimately with her first, so she took us to her bosom and drenched us all. Oilskins and bare skins were the clothes on all decks and a green water came by the ton over the bow to run the full length of the boat deck sending up geysers of foam at every obstruction to some XXX XXX [NOT CLEAR] into the after working area already under a swirly foot or so of white water. Well we lived with her and survived and are now in business with plankton nets, deep water trawl, bottom dredges, bathythermograph, Nansen bottles, thermitow, fathometer and XXX XXX [NOT CLEAR] (plus my fish line) trying to learn more about the oceans. What their bottoms are like, their chemistry, temperatures of surface and depth, and their vast populations. It's a great business, this oceanography. We are now at the stage in oceanography that the U.S was in when the first expedition began to fight their way west across the prairies, deserts, and mountains. We have meager tools, spotty information, and an unbelievably vast area unexplored. It's a big job ahead and fun to be in on the ground floor.

I go on watch in 10 mts - watch being my 4-hr. turn as nursemaid to the recording instruments back in the lab and we are due on station #5 about 3 AM, so I had better fold here temporarily. It is overcast with high strato-cumulus clouds and a light streak in the west where sea and sky meet in what was a fizzled out sunset. The sea is deep gray - leaden color really - and a good swell keeps on a nice roll at the 11 knots we are making. It's cool and damn pleasant.

For the record:

Take the case of the modern squid
He don't do what his ancestors did.
A million-year heritage was shot to hell
When he discarded his age-old shell
When the shell got heavy and made him sink,
He took it inside and invented ink,
So the Reynold's pen is nothing new
A squid uses ink underwater too.

[10](#)

Notes on Muenen's [NOT CLEAR] Marine Geology:

"Hemipelagic"- a word full of magic
Is, at least, well define in this missile

But I find rather tragic the use of "pelagic"
As meaning the same as "abyssal".

13 August 7th- Tuesday, I think, but the day of the week has no meaning for us at sea, so no one keeps track of it. We know the date for that is marked on all the machines and on our course plot, but Sunday is no different from Wednesday or Saturday. Often someone asks what day it is, and we all feel silly at not knowing and the guesses usually have a 3-day range. All the bathythermograph, G.E.K., thermitow, and wind recorder records are kept in G.C.T. (or Greenwich Civil Time) which is now 9 hrs. ahead of us, and I always feel galled a bit to put down a morning time in the middle of the night sometime. The feeling is one of frustration, I guess. Here I am up at 4 am on a black rolling morning jotting notations on a record, and when the record is worked over later, it will read 1300 and I am getting credit for my lost sleep. By the same token I feel as though I am getting away with something when I mark down 0100 at four in the afternoon. Strange, don't know why I have to get personal about it.

14 It's a nice evening. Now 1930 and the sun is still above the horizon, but not much. I'm in the chow hall again. Chuck and Jack are playing cribbage at the middle table and the sounds of 15-2, 15-4, and a pair is and come dully through to my senses. The sea is calm with a good swell running, and the starboard steel door to the chow hall is hooked outboard, but bangs against the bulkhead at the top of every roll and I can feel the shudder every time it hits. John Isaacs his midwater trawl down to 2100 fm (that's 12600 damn feet- over 2 miles) and the big winch aft is screaming with the strain of bringing it in. The sun is now set, and the western sky is a riot of color. There is a row of stately anvil topped cumulo-nimbus thunderheads along the western horizon edged in gold. If a strand of altostratus has been dyed deep purple and great spokes of pink radiate out from the spot on the rim where the sun slipped gently into the sea. Looking out the port door I see the horizon line rise past the opening and then sink below it giving me alternate door falls of sea and sky.

16 I have the 12 to 4 this morning, and if I had any sense I'd go below and get some sleep, but once I have brought this book up and am writing in it, I like to keep going. I feel it is going to be a sparse record, and I want to get as much down on paper as possible before I peter out.

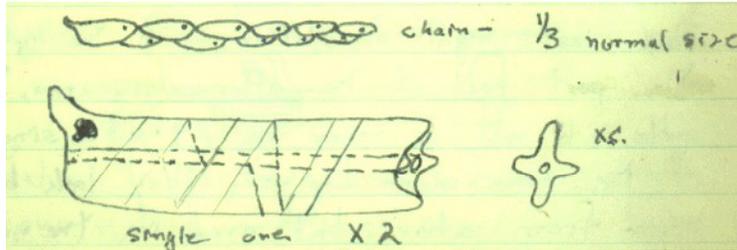
When stations come at night (we are approaching #10 now) we always do a good deal of dip-netting for the marine biologists back at Scripps. Batting along at 11 knots it's hard to believe that the sea is as teeming with life as we find it once we lay to make a station. Two nights ago I was helping Al, who was in the bucket removing Nansen bottles from the deep cast. I would carry them into the lab and place them in the rack. We had one of Mac's photoflood lamps lashed to the rail so it shone down into the water and I suddenly saw two white streaks go through the water about 5' below the surface. We soon identified them as squid - about 18' long and broke out the dip-nets. They had come up to get the amphipods that were scooting along the surface and occasionally the squid in a short fast dart would break the surface and then scoot down again. There were 8 or 10 of them, and they stayed just at the outer edge of the lighted area. Occasionally they would come nearer the ship always wary, but I netted one in the coarse meshed net and dropped him on the deck. He had a pink-silver back that



was almost opalescent, and there was something hideous and evil about him as he writhed there on the cold damp steel of the deck in a spreading pool of dark brown ink. His directional fins folded and unfolded around his tail convulsively and his tentacles thrashed the air. To test his grip I placed the edge of my canvas shoe into his head, and he grasped it with his tentacles and dug out the rubber with his single claw-like beak. I instinctively withdrew my foot and he was pulled along with it for a foot or so and then dropped back to the deck with a wet slurp and continued his futile writhings as the colors on his back faded fast. The first one we put in formalin to preserve him, and when one of the crew netted another, we saved him for bait the next day. They travel fast back-end to - the original jets - but can also move forward when they are moving in to something. Last night John caught two, and we put one right back on a hook and left it. Simmons' frantic shouts brought us to the starboard rail near the bucket, and there about 5' below the surface was a big squid - easily 4 feet in body length - with his tentacles around the smaller one and back tracking with his prize. We tried to hook him but couldn't. We could see the big pink shape there below the surface approaching the bait, take it, and then back off, but if we pulled on the line, he let go. Again the big squid would come out of the black, turn and move in fast to grasp the smaller squid in its tentacles. Each of us watching shuddered each time it grasped the bait and were grateful to be only watching the battle going on below us.

18 These waters teem with small saurys [NOT CLEAR] (sp?) and last night on station with the light over the port rail of the after working area, I was able to net as many as 24 at a single sweep of the fine-mesh dip net. They look blue when seen from above; but once in the net, it's clear that they have a blue streak down the middle of their backs and are a bright silver over the rest of their bodies. They ranged in size from 1/4" to about 2" long, and swim with quick darting motions. Some curl into a semicircle and then straighten out only

to curl again like a blue worm in its death throes. Siphonophores are also common in these net dips. They seem to float along, and I have yet to find how they locomote. They are completely transparent-looking like globules of clear protoplasm - with one small pigmented arc of dark yellow - probably the gonads. Through each runs a hollow tube or siphon [NOT CLEAR] hence the name. Most of them are colonial - probably tunicates - and chains of 12 or 15 are common, looking like a shining crystal bracelet when they are brought out of the water. Once in the formalin, you can see that they have broad bands of less transparency circling their bodies in a crisscross pattern.



Too, we netted a few of the only insect that has adapted itself to the sea - small sea spiders. It is amazing [19](#) the way an apparently barren sea seems to spring to life once you stop the ship at night, put a light over, and do a wee bit of looking.

Today we passed through an area of broad well-defined slicks. They were obviously not wind caused, and it was significant to note that the Thermitow that had recorded a homogenous area of surface temp. all the way from Frisco took marked jogs on the record as we passed through the slicks showing that slick areas have a different surface temperature than non-slick areas. Whether it is cause or effect, I do not know. The Thermitow is actually a thermometer that streams behind the ship at about 25 yds and by means of a unit and rubber-covered cable conveys the temp. to a recording instrument back in the lab. This has a continuous roll of graph paper and a pen that moves horizontally with temp. changes as the paper moves vertically past it. On the paper are recorded dates, times (GCT) course and speed changes and anything else (such as slick areas) that will help in interpreting the information later on.

The "gooney birds" - actually the black-footed albatross - have given us a good deal of enjoyment during the [20](#) past week. Seldom seen when we are under way, they appear from nowhere once we are on station or towing the mid water trawl at a slow 1-4 knots. They are a uniform dark brown except for some white on their upper tail feathers - obvious only when the feathers are spread as they land - and a small band of white around the base of the bill that is missing in some birds and up to 2" broad in others - it may be a function of their age. Wingspans are up to 6 feet, and with legs and webbed feet tucked under them and tail-feathers streamlined, they make a very graceful bird in flight. An occasional apparently effortless motion of their wings keeps them gliding for some time as they skillfully bank and turn just shimming the waves. They lack the awkward laboring flight of the duck that they closely resemble once they are floating on the surface. At the request of Scripps, we take count at each station of the number around the ship - I think 39 is the record to date - counted by Bill Menard atop the big A-frame. (squid - hunt and trawl about to come in - continued later).

(That net trawl was - so far as we know - the deepest trawl ever made in the sea 2280 fathoms it went down [21](#) - the haul? - about 3 qt of what looks in the cod-end bucket under the lights out on the fantail like an amorphous mass of black, red, and clear jellies and broken small fish bodies. The red is from the shrimp - mainly euphausiids and some red jellies. The black from the lantern fish, viper fish, and others, and the clear from weird jellies. I will try to describe the trawl and trawl haul when I know more about them and have a jar of the little devils before me.)

But to get back to the "gooney birds":

As soon as the ship is stopped or going slowly enough they glide in gracefully for a pretty silly-looking landing. They pull up sharply just above the water, extend their webbed feet forward at an angle to the surface, spread their tail feathers, and skid on their feet as they loose flying speed. Then settle awkwardly onto the water and collapse their wings by jack knifing them like a carpenter's rule along their backs. Once on the water they can move along at about 3 knots by dog-paddling their feet, and when they want to stay on the water but have to go faster, they extend their wings and flap them just fast enough to lift their bodies off the water and then they "walk" with their feet - silliest looking maneuver I ever did see. Then they collapse their wings and plane along on their bellies. They take great delight in testing for taste every thing that goes over the side from steak bones and milk containers to toilet paper and matches. No gooney bird seems to trust any other gooney bird's judgment, and I have seen as many as ten birds pick up a match in turn and each discards it when he finds it not too tasty. They were coming in close this afternoon. I was perched on the port bits reading a pocket edition of Mailey's The Naked and the Dead soaking up good warm sun, when Bob Haines went by with a whole can full of steak bones and fat, stale bread, and what-not left over from evening chow. I could hear the gooneys off the fantail and climbed up on the other platform to watch. They came right in to the fantail for the food, and how they did scrap for it. Some sadist in the crowd suggested the age-old stunt of trying two pieces to opposite ends of a good length of string and watching the fun. I imagine Homo Neanderthals used to do it with vines, but it sounded like fun to the now-bearded crew that had collected aft to watch the fun, so we did. Two birds swallowed great chunks of meat and indeed seemed surprised to find themselves joined to each other by 4 feet of stout twine. They pulled at each other for a while till one disgorged his end. The other bird though was having trouble. The whole pack had drifted some 100 yds astern following the food and most of the boys went back to their packet books or sunning. Only Mac and I stayed to see how he made out. It didn't seem like fun anymore, and as we watched the poor bird-wings extended-humping along trying to disgorge what was stuck in his throat, we felt ashamed somehow, ever though we hadn't done it.

[22](#)

[23](#)

"Poor devil" I said, and Mac said "Yeah" without turning.

One by one the other birds lift as the food supply dwindled and came "walking" back to the fan-tail. One bird stayed with the troubled one, and then he too left him and came back looking for more food. The bird was drifting farther and farther astern still humping with wings lying flat on the water. Suddenly he succeeded and took off to glide up toward the ship and the other birds. Mac and I looked at each other and just grinned, we were glad he had made it.

[24](#) It's 11:00 (oops, 2300) now, and most of the crew has retired. There are a few around that are due for the 2400 watch - reading and brewing coffee. We have speeded up to 11 knots again and are due on station in about 40 minutes. It is a nice night tonight. The moon was up for a while, a fat crescent of gold with a narrow path of golden sequins running from the ship to the horizon beneath the spot where it hung at a crazy angle like a Christmas tree ornament hung by a child and left at the wrong angle where he put it so as not to hurt his feelings. It has since been covered by clouds, but directly above are lots of stars. It is cool and the gentle roll is friendly.

Notes penned after telephoning Reproduction Section at NEL:

Any man at NEL
Who likes a good seduction
Smiles when the pretty voice answers the bell
"Good morning, Reproduction."

CHS

Whales are here for corset stays
For eating, there's the albacore
If every pet has it's *raison d'etre*
Then what is the siphonophore?

CHS

The sample is ample, but coring is boring.

Lines scribbled at 924 So. Coast after tripping over Molly's Honey Bubbles and falling on Alice an Nance's Caruso: [27](#)
[25](#)

I know Girard Herschel Street
I know the cheapest place to eat
I know the church with the highest steeple
But, alas, I know more cats than people.

Mr. Pickwich and Honey Bubbles
Are just the start of my feline troubles
No wonder the population grew so
With promiscuous cats like Mr. Caruso

Oh, for Dick Whittington in reverse.
Than rats these cats are even worse
I think that I'll import some rats
To do away with these wretched cats.

CHS

There is one thing I will bet
When we catch him in the net
That the little saury's sorry.

CHS

Putty the poor siphonophore
For you can see right through him
The lucky fellow has balls of yellow
But what good are they to him?

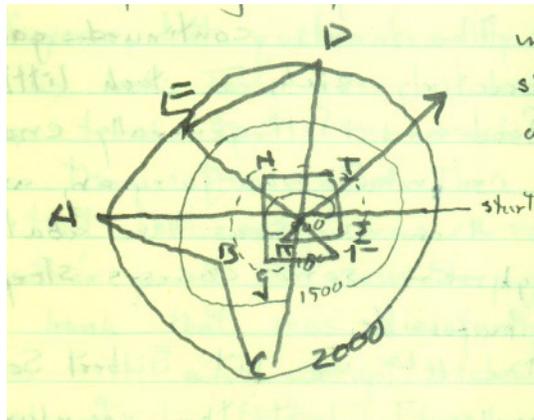
Swim trunks by Jansen
And bottles by Nansen
Dredges by Dietz and Menard

[26](#)

August 23rd Thursday

I'd feel guilty if the long hiatus since the last entry were due to more indifference, but quite frankly I have been busy as hell; and when break comes, I am so tired that the rack looms much larger than this record. The first week after that last entry was a rough one from a weather point of view. Sleep was impossible in a bunk that was constantly changing directions with an abrupt violence that left you almost breathless. I tried bracing my body crosswise, but it was too hard on my knees and small of my back. Each wave left the ship shuddering, as it shook off gallons of foaming sea. Showers were out of the question, and added to the sleepless tiredness was the physical tiredness of just trying to walk. I moved from handhold to handhold with the short unsure steps of a drunk when he isn't too sure where the ground was going to be when he put his foot down. A trip across the lab could be a mountain climb or a down-hill run depending on when you started. Warren has a game he plays that I have adapted - lean back against the roll, and instead of leaning forward with the roll back, he turns around leans back again, so he is ever leaning backward at about / this angle. The meals continued good, but though not actively sick, I took a little interest in food and felt generally enervated, uninterested in what was going on, and very tired. Since then the seas have abated some, though on some courses sleep is still utterly impossible.

About the 16th we hit Gilbert Seamount, Bill Menard I left the regular watch list and the seamount surveys became our babies - those and the dredging. This at first I thought would mean more sleep, - little did I know. We put in 32 hours straight on Gilbert. I took soundings and Bill plotted. 32 hrs in rough seas listening to pings with a reading every minute. When it was over I slept for 21 hours straight. None of the others - Miller, Holiday, Pratt, GA-5, GA-4 "Surregor"- has been so long, but they always start to come in on the fathogram at night. Holiday was a new discovery not recorded before, and it was - fun thrilling really - to watch the trace come in on the fathogram. Like doing a giant double-croctic: We do them on a maneuvering board - actually a large compass rose with 1" divisions and it makes plotting easy. Gilbert we did like this with hydrographic stations at A, C, and D.



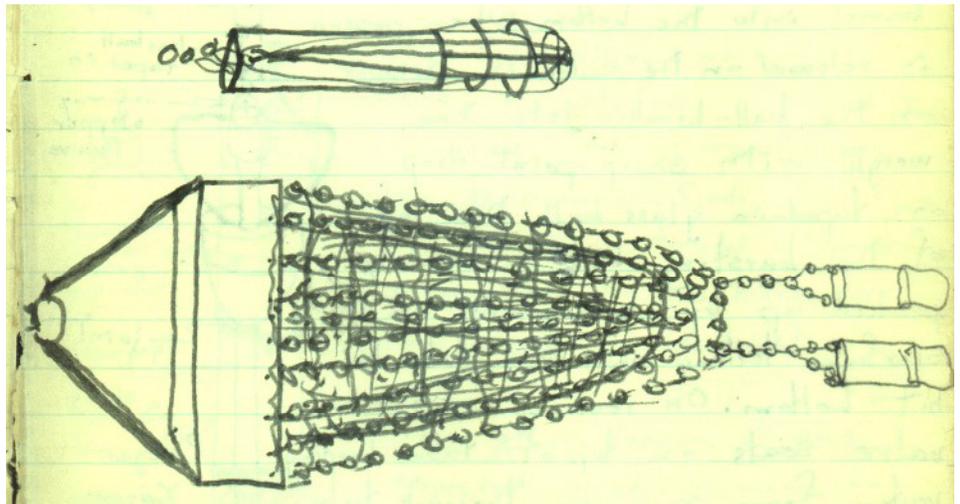
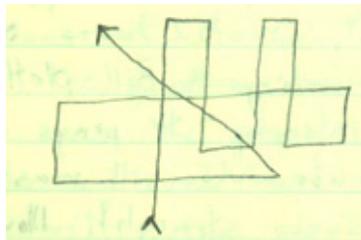
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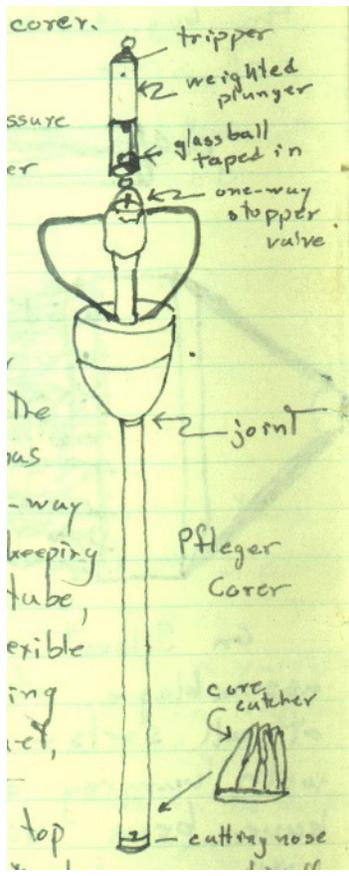
On the others we have varied this pattern to fit what we find. I plotted GA-4, and did it this way. It was a quickie and the long line on 270° gave us a check on the drift.

On each of these we have also dredge. The dredge is a sled frame with a chain bay attached (prevents dumping) and a heavy rope bag inside of that. Behind it are two pipe dredges with canvass bags to catch any fine sediments that may be there. On Gilbert we lost both bags, so I devised a baling wire framework to go around the bag. It worked, and we have done pretty well since.



29

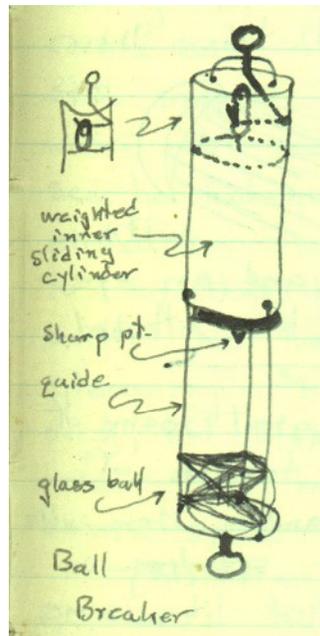
On Gilbert we collected an amazing assemblage of igneous and metamorphic Rx [ROCKS] of all sorts - like a Geo 101 lab quiz - with varying degrees of roundness - must have been 400 lbs of it. Some covered with up to 1/2" of manganese. They could only be ice-rafted from further north. Details of other hauls will be listed later, but except for a chunk of bone dredged up last night from Pratt along with the usual assemblage, and some typical volcanic Rx from Miller, they have all been pretty much alike.



We have also been doing a good bit of coring with the Pflieger corer. A weighted barrel drives a removable barrel into the bottom. When pressure is released on the cable, the tripper on the ball-breaker lets the weight with sharp point drop on taped-in glass ball. The pop of the bursting ball is clearly picked up by hydrophones on the surface telling us when tube has hit bottom. On reeling in, a one-way valve seats on top of the tube keeping water from running through tube, and care catcher of light flexible copper keeps the core from oozing out. At surface in the bucket, barrel is unscrewed and joint cork is put in top of plastic liner and liner withdrawn vertically so as not to destroy sample.

We have gotten some good cores with it, although the one tonight had nothing in the tube. The barrel was covered with light blue mud which we saved, but tube was clear. I think the stopper valve must have been stuck, although I loosened it myself before it went down.

31

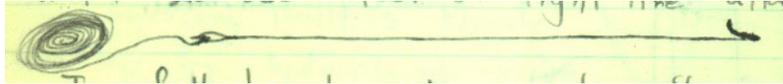


The dip-netting while we were on station continued to be good. José Barandiaran, the Peruvian Lt. Cmdr., here as an observer, found a spear somewhere has taken over the spearing department.

The other evening, it was especially good. We were on Gilbert Seamount, I had taken a break from reading soundings while Smith and Simmons were putting Nansen bottles on the Hydrographic wire at one of the stations on the edge of the seamount. The sky was overcast so no stars were visible, and the two spotlights on the mast made the fantail working area a bobbing island of light in a 3 dimensional black sea. Over the port rail we had lashed one of John McFall's photo lights that brilliantly illuminated a half circle of black water below it. We had been netting saury's for a while when big jellies began to flout into the pool of light. Tipped at an angle with their streamers before them, they looked like run-away barrage balloons that had taken their mornings along with them. It was José who first thought of the spear - a 4 foot shaft of light steel with an barb at the forward end, and an eye with 20-odd feet of light line attached.

32





In full beard, with a great mane of unruly black hair and deep furrows of concentration on his brow, standing there with his spear poised for a throw he looked like some modern version of his ancient Peruvian Tiki. The spear made a hiss as it streaked downward through the water trailing a comet-like trail of bubbles behind it, and two segments of torn transparent jelly flouted limply to the surface. Then squids showed up. "Squids", called John Isaacs excitedly as José pulled on the line feverishly to retrieve the spear. Darting experimentally into the outer limits of lighted water were two or three medium sized squid. Each sally brought them closer to the ship. José now had his spear poised waiting for them to get closer. His arm cooked back, fierce he looked, poised and ready, his arm snapped forward and the spear hit the water with a hiss and trail of babbles. We could see he had missed, a grunted oath and he pulled in for another try. I'd like to be able to say that he speared squid after until he had a great pile of writhing gleaming trashing bodies behind him on the deck, but slave to truth that I am I must note that he didn't get a one- not one damn squid.

33

[AT TOP OF PAGE 33]

There is one thing you can bet
When we catch him in the net
That the little Saury's very sorry.

This is a noisy little world I'm living in. When there isn't the throaty throb of the big diesels (sp?) below, there is a moan and whine of the winches, and always the high ping of the fathometer.

I can't write in here when it has been so long since I have written Claire, so I will dash off a line to her. I now have two letters to go to her, but want to write at least two more before we hit Kodiak. I'd like to have written her more, but there just hasn't been the time.

Kodiak, Alaska- Aug. 28th

We were to have left today, but waited hoping that replacements for the core liners, lost overboard in the storm on the way up, would get here. There was also a new B-T to replace the one with the busted unit, but it too is not here, so we leave tomorrow at 0600 without them.

34

Land, I must admit, looked good as we made our first land fall early Sunday morning. Off to port under a heavy low-hanging cloud bank, we could see the dark line of land. As we neared the island, the bank of clouds rose like a theater curtain, and before us lay Chiniuk Bay with Woody Island and Kodiak on our right and, ahead and to the left were scattered, apparently haphazardly, the many buildings of the Navy base at the head of Woman's Bay - wishful thinking. The channel is well marked by a long row of buoys, and outside of them, as though to enforce the rules of the road, low patches of dark rock jut above the surface of the water. We now had land on three sides of us, and it was lush and green.

To our right, Woody Island, where a Russian sawmill and a few shacks now fallen to ruin are the only signs of the former Russian occupation of this strategic island at the base of the Aleutian Chain. Just past Woody Island, spread over the wide mouth of a rugged valley, lay the town at Kodiak. In the early morning light, it looked white and clean, a group of neat buildings gathered together for mutual protection from the peaks that towered behind them. Straight ahead the naval base lapped up against the foot of the mountains, and above it towered a steep green triangular peak crowned with a wide halo of cottony cloud. Behind it, the jagged peaks of the Devil's Prongs were covered with a clean tablecloth of cloud, while the smaller white dailies were spread neatly over the floors of the surrounding valleys. To the left, past a ragged headland, Woman's Bay stretched back toward the base of a steep green ridge, and farther left in the distance, rose more steep peaks, and there were great patches of snow in the valley heads towards their summits. It was cool and clear and I sucked great lung fulls as I stood up on the bridge and swept the island with the glasses I borrow from Menard.

35

We turned left and headed into the entrance of Woman's Bay. I mentioned to José that the place looked deserted - and indeed it did. It was still some distance away, but we could see movement, hear no sounds to betray that this was any more than the model it appeared to be from seaward. As though to dispel our doubts, a small ship's whaleboat came around the bend in the bay and chugged along the shore, and above the muffled sound of our own engines - now slowed to less than half speed - we could all hear the roar of airplane engines being warmed up, and we saw a truck leading a billowing cloud of dust along the foot of the

37

36

cliff at the water edge. I remember wandering about the dust because there was a misty light rain blowing into my face.

The well-marked channel lead around a sharp promontory dotted with one story white bldgs., sheds, and ahead of us, at the end of the bay, lay several large hangers with ramps leading from water to the large parking area. To the right, a light freighter and floating dry dock were tied up to stubby piers, and we headed towards an empty berth at the fueling pier and prepared to moor behind a navy tug - the type from the which the Horizon was converted. Three sailors sauntered out along the pier to handle lines, and I recall that no two of them were dressed in the same uniform. Heaving lines snaked through the air from ship to pier, somewhere below the enunciators clanged and the Horizon shuddered as the engines were reversed and we nudged the great log floating at the base of the pilings [NOT CLEAR]. Line were made fast, the engines secured and we had arrived.

The water and power lines were put aboard, we got a telephone and a book of base regulations, and changed our clothes in preparation for a trip to town.

Warren Wooster, Al Smith, Bill Menard and I decided to walk part way took a bus stop behind the hangers where the yellow bus fills up for Kodiak. The next one left in an hour, so we started to hoof it. We had soon left the base behind, and once over the crest at a low ridge, were in the foothills of the range. The triangular peak that I had seen that morning from the ship rose above us, green and smooth- looking. An eruption at Mt. Katmai (a hundred miles away) in 1912 had blanked the island with volcanic ash and killed off most of the vegetation. The peak was covered with tall grass underbrush. From the narrow road, it looked like soft grass, but it would have been a rough climb though thick brush. It had that same deceptive green smoothness that the hills had around Sentani Lake in New Guinea, hills, that were covered with almost impenetrable kunai grass. We crossed a rushing stream on a wooden bridge a stream that looked as though it would be good fishing - and skirted a small lake. Small spruce grew down to the edge of the water where the backdrop at mountains was reflected in the mirror-like water. Occasionally, an ever widening circle of ripples showed where some fish had risen for a fly. It was quiet and peaceful, and the warm sun beat on us and we all were sweating profusely. When a 39 Chevy overtook us and asked if we wanted a ride, we decided to take it. Wed' been at sea 28 days and the unaccustomed exercise was taking its toll, and our legs could tell we had been walking a good deal more than is possible on a 140-foot ship. A man and his wife had been fishing and the 4 big salmon on newspaper on the back seat had been caught in only 2 hours. We made small talk and I peered through the dirty windows at the rugged beauty of the country gliding past. Past another lake, around a sharp spur at the mountain where the road bed had been cut into a hard cherty formation, and down a long grade into Kodiak.

[38](#)

[39](#)

[40](#)

[41](#)

What had looked neat clean from the sea turned out to be messy and indeed far from clean. Main St. in Kodiak is a group of tired looking frame buildings leaning against each other for mutual support. Two drug stores, one so-called hotel, a general supplies stores, barber shop - a stucco bank, grocery store, 2 restaurants, and 12 bars. One block west is the bay, and behind the stores and bars in the other direction clusters of shabby houses are joined by unpaved rutted streets. There is a sharp jog in the main street and it continuous on to the cannery on an arm of the bay. Here was more, what I had expected to be like. The cannery was built out over the water on pilings, nets were hung cut to dry, and 8 or 10 small fishing boats bobbed at the side of the pier. A rusty winch complained bitterly as a half-breed turned the handle that raised a great net of fish from the bowels of a boat below. The catch was deposited in a big wheeled bucket which he pushed into the clap boarded building that housed the cannery.

[42](#)

We wandered back to the center of town, picked out the Casino as the best bar, and went in. It was dark, and we waited and still our eyes got accustomed to the gloom. Seated around a table in the corner with our 2nd beers in front of us, we felt at peace with the world and conversation came easily.

It seemed awfully bright as we came out, and headed down the streets toward the bus stop. One brief stop in one of the few shops in town was enough to show us that there was nothing in Kodiak that we really needed - just junk jewelry, head scarves block printed in colors too gaudy and with Alaska in big letters across it. In the back were two peep machines with photographs on the outside of full breasted nudes and a sign saying that for 25¢ you could watch a movie of a day in a nudist camp.

I'm glad we had the walk in because you could see nothing from the disheveled bus that bumped us back disgorged us and a handful of sailors, at the terminal on the base.

[43](#)

Wrote a long letter to Clare that night while the others - well, some of them, went over to the officers club. On returning to the ship, I found that Bill Reidle, Charlie Denkle, Bob Wisner, John Cochrane had come in by plane and I had four letters and two I think cards (to be opened the 19th) from Clare, plus clippings et al., and The Sea Around Us from the book store in La Jolla thanks to J. Peirson.

Unless your stomach was borrowed from Tarzan, limit your claming to months that an R's in [NOT CLEAR].

[44](#)

Tonight we all rocking
In the cradle of the deep
But the rocking is too violent
For anyone to sleep
I think the cradle's broken
And just to make it worse
Tonight it's being rocked
By a very drunken nurse

I hate to be making platitudes
But I like warmer latitudes

Done in reply to Tom Costain's poem on Lascivious carriage last June.

[45](#)

[PASSAGES CROSSED OUT]

So this long when I am finished
From the world should not behind
I will keep the sex diminished
Won't trap myself as Boswell did.

Lives of great men all remind us
As their pages we or'turn
That we shouldn't leave behind us
Journal that we ought to burn

Lusty thoughts will not be scriven
My libido I will restrain
Licentious thoughts from mind are driven
This log will virgin pure remain.

" Listen Bub", a voice is saying

"To keep it pure is dumb as hell
" you write of coring not of laying
and brother it will never sell"

47 Wednesday Sept 12th

The deep cast is coming in on Sta #50, and since the other section has this station I am back in the lab heckling. Bob Wisner plans a 16-hr net trawl, so even though it is 1900 and we have the next station (Al, José, Denkle, and I) it will be quite a while, plenty of time for sleep, and I want to get this caught up. I've written XXX [NOT CLEAR] and the clan so with some time at my disposal and a clear conscience I taken pen in hand.

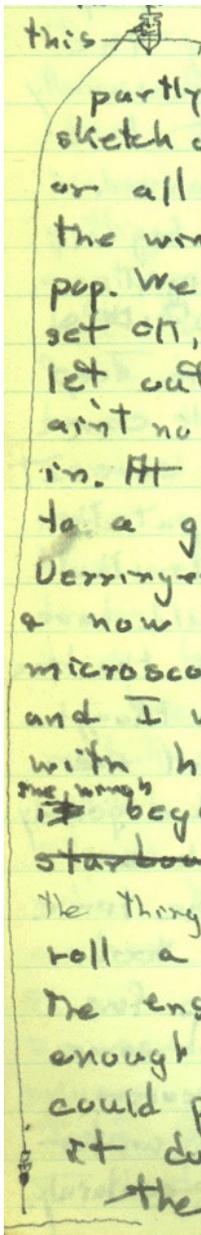
It has been up until the last couple of days a dark, rainy, and generally rough seas sort of a trip. We picked up one new seamount on Sept. 5th that I surveyed, but until yesterday it was pretty routine stuff.

No new BT's waiting for us in Kodiak, so we waited a day for them all to no avail. Warren wanted some more reagents and we needed more core liners for the Pflieger corer to replace the ones washed overboard on the first leg. None arrived, so we have secured the BT - winch (use it occasionally for fishing only) and take BT-s only with SIB 5-13 at 137 m on the shallow casts. I guess Warren Wooster and Charlie Denkle are getting along in their oxygen phosphate analyses without the extra reagents, but Willie Weedle (Tenunda, South Australia) and I have had the skimp on the core liners. We've made one 2-foot core, and several regular length (6') but now have only two liners yet. We may have to extrude them from one liner into bottles on successive tries, but we will scrape along.

We've divided the scientific watches into watches, each of which makes the station and then stands all watches till the next one when the other crew takes over. It makes a much better arrangement and you don't have to loose quite so much sleep. For some weird reason - perhaps we were had - Al Smith, José Barandiaran, Charlie Denkle and I had only night watches for the first 8 or 10 days out. I never did get quite used to staying up all night and sleeping during the day. We still get them occasionally at night, and for our last two stations it hasn't even rained.

48

49



Yesterday though things began to pop. We had again the night station the night of the 10th - 11th and Al and José secured after the deep cast was in and Willie Weedle came on deck to help with the core. It was to be core #10. We put the rig over in 2750 fm of water, that is three miles down - would have taken about 5100 meters had the line gone straight down, but even though there was a very mild swell and wind was light, we had a goodly drift that managed to work up a 45° wire angle by the time 5100 meters of wire was out, so we took her on down to make up for the big wire angle. I wish some one would work out or discover what a wire suspended in water does as the ship drifts. It certainly doesn't stay at 45° all the way to the bottom. I suspect it is a rather like this [SEE SKETCH] but that is mostly guess work partly and because I wanted to draw the sketch anyway. We let out finally 6300 m or all but the last layer of turns on the winch drum, and still the ball didn't pop. We had a hydrophone over volume set on, but no bloody pop. We couldn't let out more wire because "there ain't no more" so we started to haul it in. At about 5900 m the winch ground to a groaning complaining halt.

[54](#)
[50](#)

Don Derringer was winch man - full beard now waxing the much-fingered almost microscopically small tips of his mustache and I went up to the boat deck to check with him. He goosed up the power and the winch began to turn slowly, each roll to port put enough strain on the thing to stop the winch. On the starboard roll a foot or so would come up, then the ensuing part roll would loosen enough so that the next roll back we could pull a bit more in. We had seen it do this before and knew it was the way a winch reacted when it was pulling a deep core out of the bottom, so our hopes rose. It is a three-hour job at least - or should be if your wire has as many splices as this has - to bring a core up from over three miles, so we settled down to some semi serious dip netting and spearing.

There were a few large sauries that broke water occasionally in short jumps as they streaked around under the light. I saw one flying fish, and a few 3 foot white-bellied devils just out of the range of good vision. Then the squids came up - probably after sauries or copepods - and I missed 8 or 10 goods ones with the spear. It was then early in the morning,

[51](#)

Derringer had given way to Fenton on the winch, pitch black night and given way to the first faint shuttle shadings at dawn and my thoughts on fishing had given way to very happy if slightly libidinous thought of Clare when I was startled by a splash followed by great dripping noises. I turned and there where the wire left the water and rose past the bucked to the sheave, a great gleaming black mass clung to the wire and was still dripping as it rose slowly upward twisting lazily about the wire. I screamed at George to stop the *@!\$%# winch and jumped into the bucket.

What I had at first fleeting glimpse thought to be turtle, I now saw was an immense rock that had some how become fouled in the 5/32" wire we use for hydrographic wire and hauled all the way to the surface. The winch had stopped, and it seemed quiet without the usual straining whine that changes pitch with every roll, and I could hear the dripping as water still drained from "the thing".

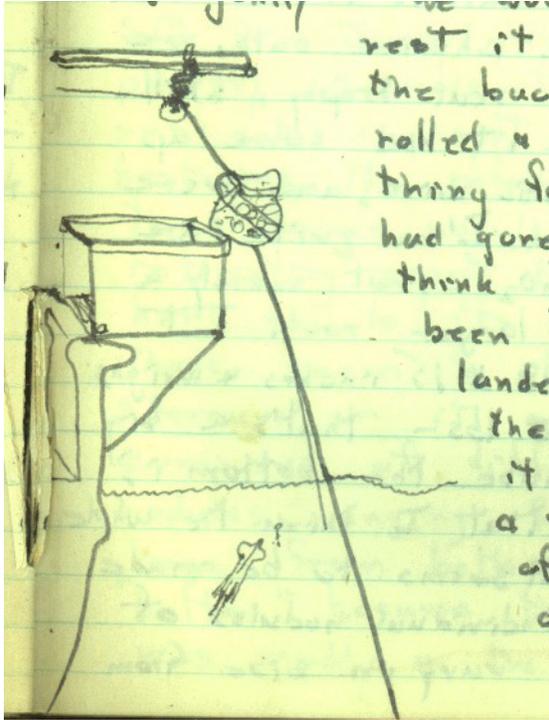
[52](#)

George shouted down "What the hell is it, Stew?"

I was looking at it and still couldn't believe it. Three or four turns of wire were wrapped around it, and I held my breath for fear it would come loose and drop back into the water - who would believe it when I told them that "we had brought up a big rock on the hydrographic wire, but it - uh - came off and fell back into the sea.

I knew at once it was a real find and could now see that it was at least coated on top with MnO₂ - manganese dioxide- a typical encrustation often found on rocks dredged from the ocean floor. Mid Pac [MID PACIFIC] got some nice nodules from Sylvania, Hess, and Johnson guyots, and they were ecstatic over specimens as big as your fist and here before me dangling on wire no thicker than a lead pencil was a piece almost 3 feet across. I shouted for Willie Weedle he came up into the bucket. We decided to have George raise it gently and we would pull it over and rest it on the edge of the bucket. Then the ship rolled and I hung on to that thing for dear life. If it had gone to the bottom, I think I would still have been hanging on when it landed.

[53](#)



Bob Haines brought the wire comealong, hooked it to the bucket rail and took enough strain off the outboard part of the wire that we were able to un-wrap the specimen, and Bill and I lowered it gently - even lovingly - to the floor of the bucket. It is without a doubt the finest geological specimen ever brought up from the ocean floor - certainly the biggest from that depth. It is the sort of specimen that should be placed on the pedestal in a museum somewhere with a brass plate identifying it and a velvet guard rail on highly polished brass post to keep people from touching it.

We carried it into the lab, grinning like Cheshire cats, we knew it was a real trophy, still couldn't believe it had come up in the hydrographic wire, and were justifiably excited I'm quite sure it is pure MnO_2 - not merely a coating on a large rock. It measures 25 x 18 x 15 inches and weighs we estimated 120 lbs - that's a big hunk. It is because the bottom is all manganese that I think the whole thing is pure. It seems to be made up of many individual nodules of MnO_2 that vary in size from pea to baseball size - the largest just over 3" in diameter. Possibly each nodule has something as a starter for collection at its core. It is strange that MnO_2 collects this way. There is not even a trace of Mn to be found in sea water samples, yet these nodules are found. Possibly it is collected by

organisms as Pb by some snails as and vanadium by some tunicates, but I rather doubt it. I think it is probably to the "gun barrel" FeO_2 concretions found in the Cretaceous sands of SE New Jersey. Why all the Mn for probably hundreds of cubic miles should rush to one spot to be participated beats me. An interesting problem, though, the "Horizon nodule" has another interesting aspect that may be a hint as to its method of formulation. There seem to be three distinct "terraces" on it and each composed of different sized nodules, ranging from small to large from bottom to top. I say "bottom" because that side of it was muddy a the "top" free from mud and obviously the area of longest accumulation of MnO_2 .

55

56

Sept. 21st Friday

It is now 1330 I am up on the boat deck propped up against the quarter-inch winch in the hot sun. We are now in + 9 time zone I think of Clare as getting ready to make the train to Lakeville for the weekend.

Time seems to move right along we left Sta #63 this morning - that leaves only #65 for our section. I have been using what spare time I have found to get caught up on my charts. Getting positions and courses made quo from the chart house, putting them on the position plotting sheets I brought along then putting in all our soundings come every 10 minutes - oftener when there is some thing of interest- it makes a lot of plotting to do. I'm up to station #52 so should finish OK -

But to continue where I left off last week:

[57](#)

The shape of the nodules making up the muss of each "terrace" is different - getting larger more separate with each successive lager The method of accretion suggested by this terracing in this:

First Stage: Collection of MnO_2 in one location on bottom formulation of base of present nodule to a thickness of approx. 3"

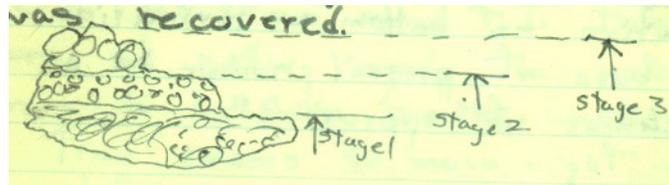
Between the first second stages the nodule was covered with sediment to the extent of the present exposed portions if this first "terrace" while more MnO_2 continued to accumulate on the uncovered portion.

Second Stage: Collection of MnO_2 on exposed portion to a thickness of 6' more (or total of 9" now).

Again sediment covered more of the nodule covered part of stage two - leaving an even smaller area of bare MnO_2 to attract farther deposits.

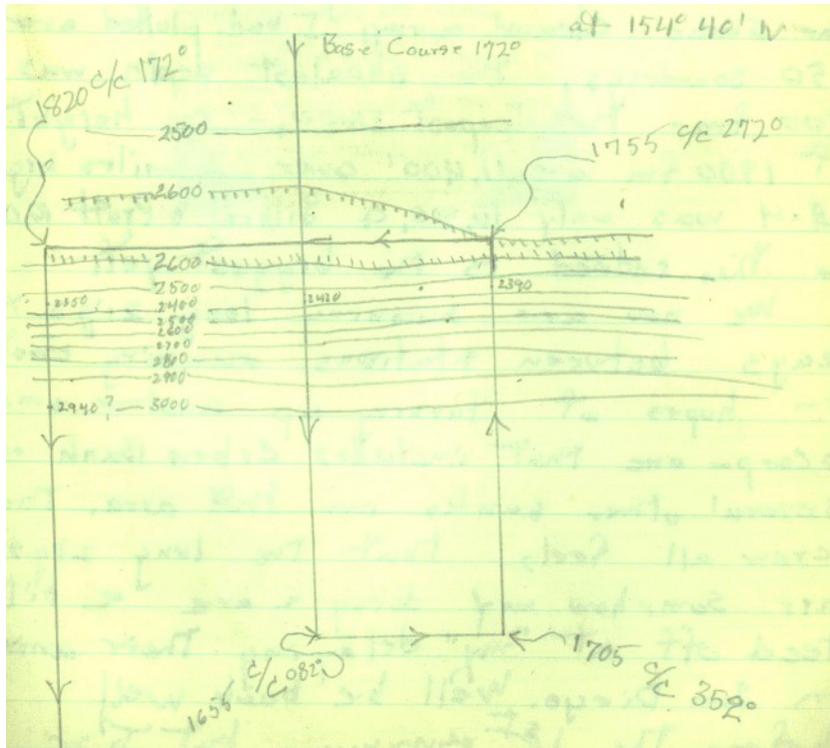
[58](#)

Stage three: Accumulation of more MnO_2 on top of exposed portion of stage two formulation of the largest nodules. This for an additional 6 and' the stage at which the specimen was recovered.



By the time it was aboard and the care up- a good one but anticlimactic- it was them 6 in the morning. Reidle went bellow for some sleep I stayed up as the watch until about 0800. The curious flocked back to see it, and even thought I was relieved at the watch, I stuck around to ward off souvenir hunters everyone wanted a piece of it. Hit the hay about 11 AM dead tired was awaked about 3:30 to come back and see what was happening to the bottom. I then ran a 3 hr survey (100 snds) of what I am quite sure is the west ward extension of the Mendocino Escarpment. It shoaled to 2420 fm and then dropped off to 3000 ft in a few minutes- that is over 3000 ft and is very similar to the scarp further. This extends the scarp westward to 1500 miles, but is same 73 mile south of the depth recorded by the USS Caimar as sent to Menard by Bob Dietz on his trip to Hydro on route to Europe. The contours look like this:

[59](#)



60

29° 35' N. 147° 42' W

Then the night of Sept. 18th and 19th I celebrated my 29th birthday by bringing in the biggest seamount of the trip. This may be one they have been saving the name Scripps for. I had the watch and it started coming in on the fathometer at 9:30 the night of the 18th. I was still plotting at Midnight when José came to relieve me and I plotted right on - with him calling off soundings - until 4:40 the morning of the 19th. As the smoke cleared away, I had plotted over 350 soundings, the shoalest depth was 900 fm - the deepest 2800, - a height of 1900 fm or 11,400' over 2 miles high. SA-4 was only 10,500 and Gilbert and Pratt 10.080 so this indeed is the biggest yet.

We now are running long zigs and zags between stations running East in hopes of turning up another small scarp - one that includes Erben Bank and several other bank in that area. The crew all feels that the long zigs are somehow my doing and are a bit teed off at "my" delaying their arrival in San Diego. We'll be back well before the 1st anyway but I am getting a little tired of some of their cracks - all done good naturally, but getting monotonous for me. Gosh knows, I want to get back as much as any and I am sure more than most.

61

11,400-Foot Peak Discovered in Pacific

LA JOLLA, Sept. 27 (AP)—Two seafaring scientists have discovered an 11,400-foot mountain rising from the floor of the Pacific Ocean. They believe it is the largest known seamount, as undersea peaks are called.

Its top is about a mile beneath sealanes 700 miles northwest of Hawaii and it is 18 miles across at the widest point of the base, the scientists said. They expressed surprise that it has not been discovered before.